

MINCO

Engineering Instruction
No. 138

USE OF MINCO #10, #16, AND #19 PRESSURE-SENSITIVE ADHESIVE

Minco #10, #16, and #19 Pressure-Sensitive Adhesives are film adhesives for bonding Thermofoil™ heaters (polyimide-insulated or aluminum-backed silicone rubber) or Thermal-Clear heaters to flat or concave heat sink surfaces. These PSAs are NASA approved for vacuum environments (NASA reference publication RP 1061), with a useful temperature range from -32°C to 100°C (-25°F to 212°F). With a .003 inch (.076 mm) aluminum foil liner, the upper temperature limit is 150°C (302°F).

Over time, these adhesives can suffer from a gradual reduction in performance; consequently #10, #16, and #19 PSA have six-month shelf-life. The six-month time limit is intentionally conservative; a cool, dry, UV-free environment will prolong shelf life. The #10 PSA release liner is more susceptible to moisture absorption problems than #16 or #19. Avoid moisture problems by keeping the heater in a dry environment or in the original sealed packaging until it is used. After the heater is applied, the adhesive no longer experiences shelf-life degradation. The following instructions will ensure the best results:

A. MOUNTING A HEATER WITH PSA

1. Remove dust, oil, and other contaminants from the heat sink, using a suitable solvent such as acetone or alcohol. An etched or slightly roughened surface provides the best bond.
2. Remove the release liner from the heater (tweezers may be helpful for lifting liner). Avoid touching the exposed adhesive.
3. Carefully position and apply the heater to the heat sink using firm, even hand pressure over the entire bonding area. Any trapped air will impede heat transfer and may cause the heater to overheat.

Alternate method: *Partly peel the liner from one edge and fold it back. Position the heater, and press down the area with exposed adhesive onto the heat sink. Then carefully pull the liner out from under the heater and press the heater down as the liner is removed. This method can help prevent trapped air and make positioning easier.*

The heater is now ready for operation. However, for the best adhesion, the following steps are recommended:

(continued on the opposite side)

DR: MA 5/22/00
CHK: BMB 5/22/00
ENG: GBX 5/22/00
APP: (MP) 5/22/00

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CAUTION: Do not cure PSA in the oven if the heat sink cannot withstand the temperatures recommended in the following steps. In particular, avoid placing LCDs in an oven unless you know that they can withstand these temperatures.

4. Use a rubber roller to press the heater onto the heat sink. Roll from the center toward the edges to remove trapped air.
5. Place the installed heater into a 100°C (212°F) oven for at least five minutes. Then while the adhesive is still warm, repeat step 4. A two to three day *wet-out* time will maximize adhesion.

If the heater will be operated in a vacuum environment, we recommend that step A.5 be performed in a vacuum oven to remove any trapped air. The temperature should be set at least as high as the operating temperature, but not above 175°C (350°F) for polyimide insulation.

B. APPLYING PSA SUPPLIED AS A SEPARATE ITEM:

1. Remove dust, oil, and other contaminants from the bonding surface. A solvent such as acetone or alcohol may be used.
2. The adhesive has paper liner on both sides. Before removing either liner, cut the adhesive to a slightly larger size than the unit.
3. Remove the plain white liner by lifting it at one corner, then carefully peeling it away.
4. Apply the exposed adhesive to the bonding surface and press it firmly in place. Continue to apply finger pressure until the entire bonding area has been pressed.
5. Trim the liner and excessive adhesive to the size of the heater; or score the adhesive around the perimeter of the heater with a knife or fingernail and rub away the excess adhesive.
6. Mount the heater per section A.

C. ADHESIVE REMOVAL/REAPPLICATION INSTRUCTIONS:

1. Remove the liner from the adhesive side of the heater.
2. Wet a disposable tissue (Kimwipe or equivalent) with acetone and moisten the adhesive.
3. Firmly press strips of masking tape to the moistened adhesive. Verify that there is no standing liquid before applying the tape.
4. Remove the masking tape using a quick pulling motion. Pull the masking tape away at an angle of approximately 135°.
5. If some adhesive remains, repeat steps C.1 through C.4.
6. Before applying new pressure sensitive adhesive, clean the surface thoroughly with acetone or isopropyl alcohol.
7. Apply new adhesive per section B.

We believe this information to be reliable, but the customer must assume responsibility for heater performance in the intended application. MINCO accepts no liability beyond our standard warranty for consequences of improper installation and/or heater or adhesive failure.

If any questions or problems occur, contact your MINCO sales representative or the factory for assistance.